Air Force SBIR Impact

Portable Gaseous Leak Location System

Company:
Laser Imaging Systems, Inc.

Location:
Punta Gorda, FL

Employees:
7

President:
Tom McRae, Ph.D.

Project Officer:
Kevin Zysk, Ph.D.
Arnold Engineering Development Center, Arnold AFB, TN

The laser camera allows real-time visualization of gas leaks that are virtually invisible to the naked eye. More than 80 different gasses may be seen with this technology.

Air Force Requirements:

The rapid location of fugitive emissions of ozone-depleting and other hazardous gases has been a goal of the Air Force for many years. The need for a sensitive portable gaseous leak location system capable of detecting leaks from Air Force refrigeration facilities was required. The requirement called for a system that could be easily carried by one person, have a field-of-view of at least five degrees, and have a leak detection range of at least ten meters. The prototype leak location system also had to be reliable, capable of outdoor operation, and be safely operated in confined conditions.

SBIR Technology:

Under a Small Business Innovation Research (SBIR) Program Phase II contract, Laser Imaging Systems (LIS) advanced the development of their patented GasVue technology into a sensitive portable gaseous leak location system capable of meeting Air Force requirements. LIS's GasVue technology had shown promise as a potential solution to this problem, but current systems were too heavy and large, had limited detection range and displayed poor image quality. They also required too much support equipment to be of practical use. Using a mathematical system performance model, LIS determined that significant improvements in the image quality, without loss of detection range, was

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possible with a redesign of the synchro-scan subassembly. Based on innovative scan mirror and video frame conversion technology, a synchro-scan unit offering both improved optical resolution and increased detection was designed and built. LIS also devised an improved method to cool the laser within the GasVue camera, significantly reducing the system size, weight and power requirements.

Company Impact:

In addition to the prototype GasVue system being built for the Air Force, LIS has already received requests for three other "spin-off" devices for industrial applications. The Electric Power Research Institute has requested a prototype shoulder-mount GasVue system capable of locating sulfur hexaflouride leaks from switch gear in electrical substations. The EPA Common Sense Initiative Program has recommended that a GasVue prototype capable of rapidly locating large leaks in petroleum refineries technology be evaluated as an alternative method of reducing fugitive emissions of volatile organic compounds. Ford Motor Company is also interested in a high-resolution version of the Air Force GasVue system as an assembly line leak testing technology for automotive fuel and air conditioning components.

Company Quote

"The Air Force SBIR Program has allowed LIS to advance the development of our GasVue technology into a product that not only will solve their problem, but is now an attractive solution to numerous other industrial leak location applications."

Dr. Tom McRae
President/CEO

SBIR

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